

NODE=B032

 $\Sigma(1620) 1/2^-$ $I(J^P) = 1(\frac{1}{2}^-)$ Status: *

OMITTED FROM SUMMARY TABLE

The S_{11} state at 1697 MeV reported by VANHORN 75 is tentatively listed under the $\Sigma(1750)$. CARROLL 76 sees two bumps in the isospin-1 total cross section near this mass. GAO 12 sees no evidence for this resonance.

Production experiments are listed separately in the next entry.

 $\Sigma(1620)$ MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
≈ 1620 OUR ESTIMATE			
1600± 6	¹ MORRIS 78	DPWA	$K^- n \rightarrow \Lambda\pi^-$
1608± 5	² CARROLL 76	DPWA	Isospin-1 total σ
1633±10	³ CARROLL 76	DPWA	Isospin-1 total σ
1630±10	LANGBEIN 72	IPWA	$\bar{K}N$ multichannel
1620	KIM 71	DPWA	K-matrix analysis

NODE=B032M

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→ UNCHECKED ←

OCCUR=2

 $\Sigma(1620)$ WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
87±19	¹ MORRIS 78	DPWA	$K^- n \rightarrow \Lambda\pi^-$
15	² CARROLL 76	DPWA	Isospin-1 total σ
10	³ CARROLL 76	DPWA	Isospin-1 total σ
65±20	LANGBEIN 72	IPWA	$\bar{K}N$ multichannel
40	KIM 71	DPWA	K-matrix analysis

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OCCUR=2

 $\Sigma(1620)$ DECAY MODES

Mode
$\Gamma_1 N\bar{K}$
$\Gamma_2 \Lambda\pi$
$\Gamma_3 \Sigma\pi$

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 $\Sigma(1620)$ BRANCHING RATIOS

$\Gamma(N\bar{K})/\Gamma_{\text{total}}$	DOCUMENT ID	TECN	COMMENT	Γ_1/Γ
0.22±0.02	LANGBEIN 72	IPWA	$\bar{K}N$ multichannel	
0.05	KIM 71	DPWA	K-matrix analysis	

DESIG=1

DESIG=3

DESIG=2

NODE=B032220

NODE=B032R1
NODE=B032R1

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Sigma(1620) \rightarrow \Lambda\pi$	DOCUMENT ID	TECN	COMMENT	$(\Gamma_1\Gamma_2)^{1/2}/\Gamma$
0.12±0.02	¹ MORRIS 78	DPWA	$K^- n \rightarrow \Lambda\pi^-$	
not seen	BAILLON 75	IPWA	$\bar{K}N \rightarrow \Lambda\pi$	
0.15	KIM 71	DPWA	K-matrix analysis	

NODE=B032R3
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$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\bar{K} \rightarrow \Sigma(1620) \rightarrow \Sigma\pi$	DOCUMENT ID	TECN	COMMENT	$(\Gamma_1\Gamma_3)^{1/2}/\Gamma$
not seen	HEPP 76B	DPWA	$K^- N \rightarrow \Sigma\pi$	
0.40±0.06	LANGBEIN 72	IPWA	$\bar{K}N$ multichannel	
0.08	KIM 71	DPWA	K-matrix analysis	

NODE=B032R2
NODE=B032R2 **$\Sigma(1620)$ FOOTNOTES**

¹ MORRIS 78 obtains an equally good fit without including this resonance.

² Total cross-section bump with $(J+1/2)\Gamma_{\text{el}} / \Gamma_{\text{total}}$ is 0.06 seen by CARROLL 76.

³ Total cross-section bump with $(J+1/2)\Gamma_{\text{el}} / \Gamma_{\text{total}}$ is 0.04 seen by CARROLL 76.

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NODE=B032;LINKAGE=C

NODE=B032;LINKAGE=A

NODE=B032;LINKAGE=B

$\Sigma(1620)$ REFERENCES

NODE=B032

GAO	12	PR C86 025201	P. Gao, J. Shi, B.S. Zou	(BHEP, BEIJT)	REFID=54341
Also		NP A867 41	P. Gao, B.S. Zou, A. Sibirtsev	(BHEP, BEIJT+)	REFID=53734
MORRIS	78	PR D17 55	W.A. Morris <i>et al.</i>	(FSU) IJP	REFID=32092
CARROLL	76	PRL 37 806	A.S. Carroll <i>et al.</i>	(BNL) I	REFID=31760
HEPP	76B	PL 65B 487	V. Hepp <i>et al.</i>	(CERN, HEIDH, MPIM) IJP	REFID=31761
BAILLON	75	NP B94 39	P.H. Baillon, P.J. Litchfield	(CERN, RHEL) IJP	REFID=32089
VANHORN	75	NP B87 145	A.J. van Horn	(LBL) IJP	REFID=32093
Also		NP B87 157	A.J. van Horn	(LBL) IJP	REFID=32094
LANGBEIN	72	NP B47 477	W. Langbein, F. Wagner	(MPIM) IJP	REFID=31758
KIM	71	PRL 27 356	J.K. Kim	(HARV) IJP	REFID=31740
Also		Duke Conf. 161	J.K. Kim	(HARV) IJP	REFID=31741
		Hyperon Resonances, 1970			
